

10/586559

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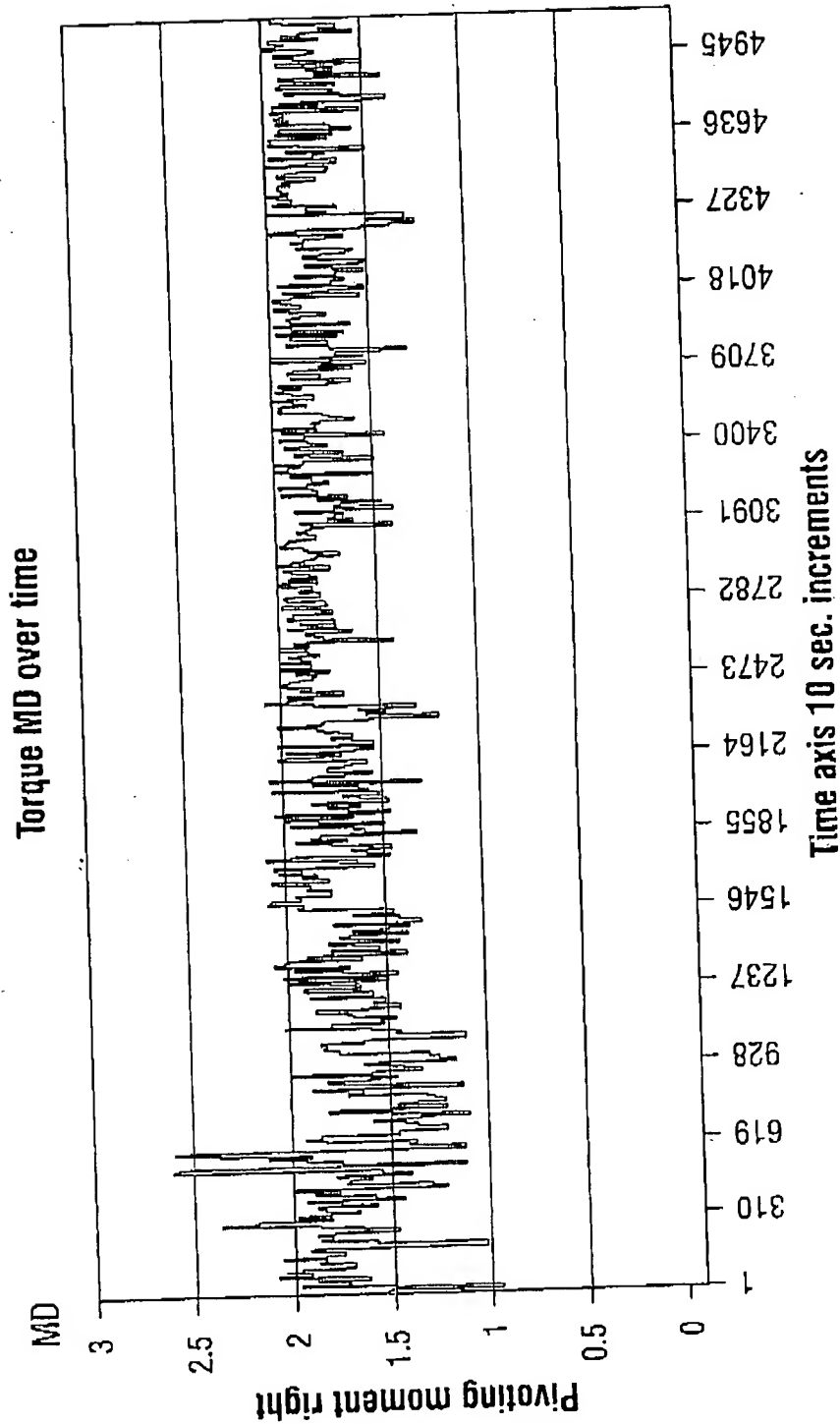


Fig. 1 : Measured torque MD of a produced hinge over time (time axis in 10 second increments)

REFERENCE

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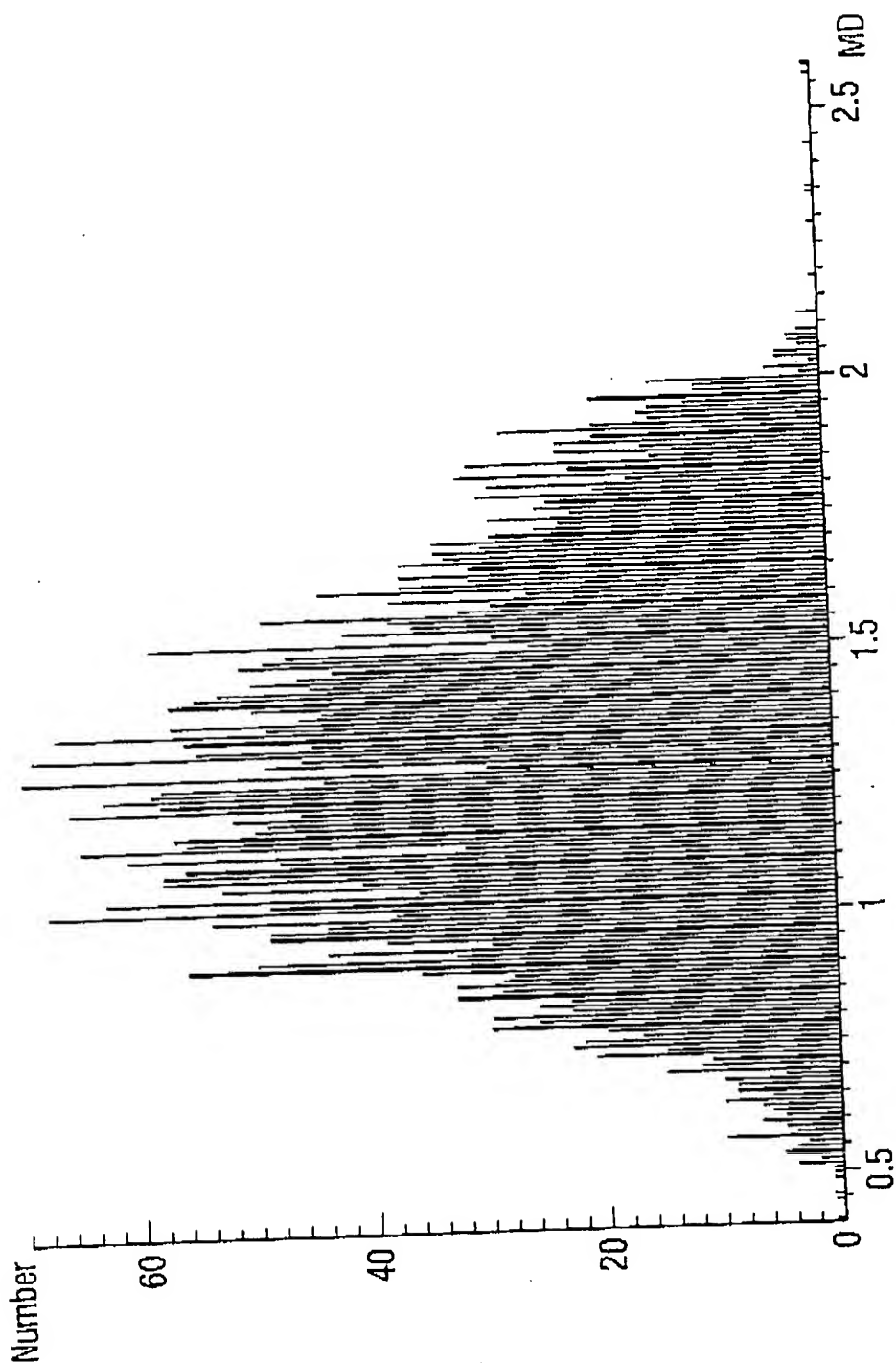


Fig. 2 : Histogram of the torque MD with the measuring range 0 Nm to 2.5 Nm on the X-axis

REPLACEMENT

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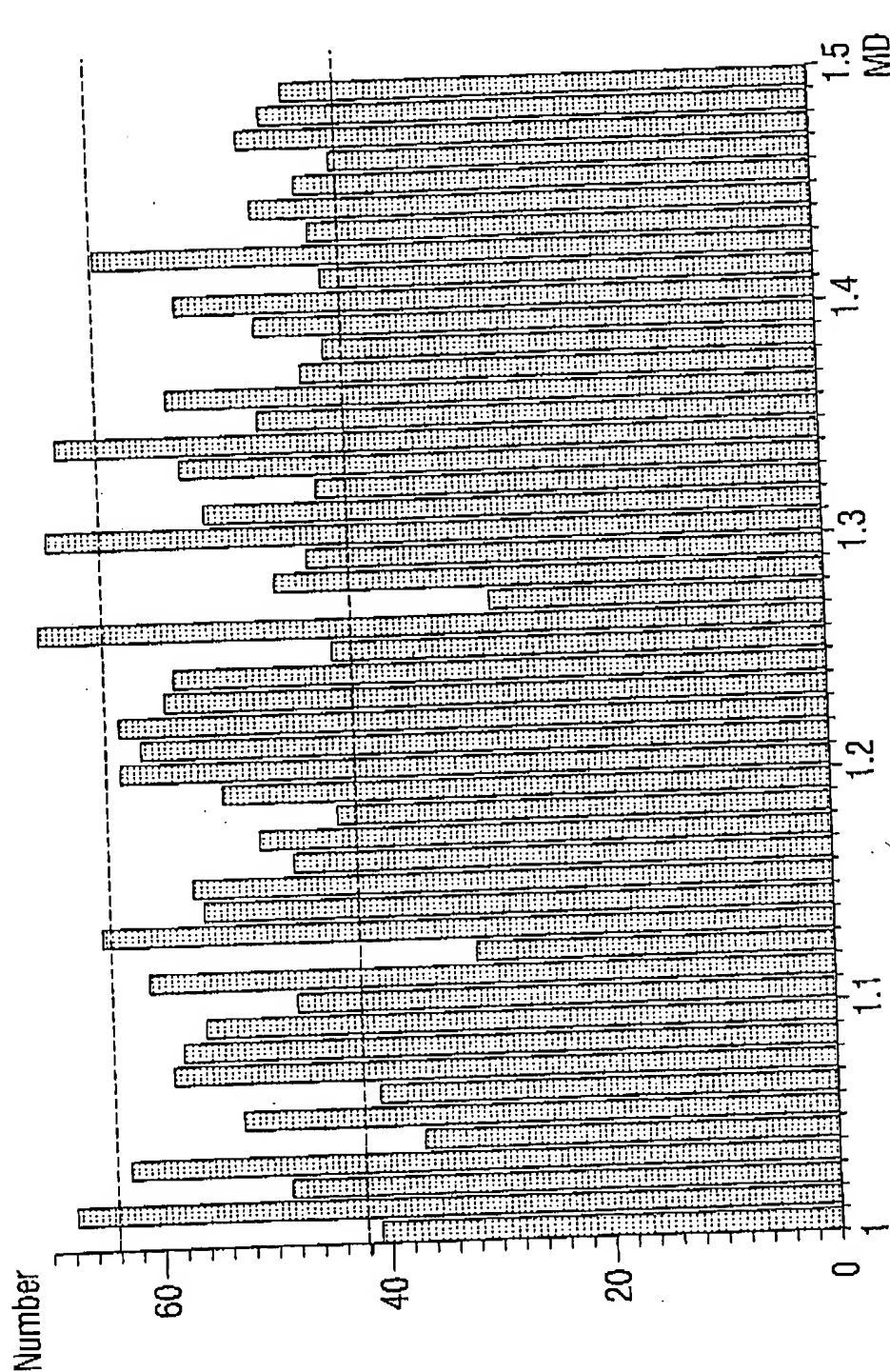
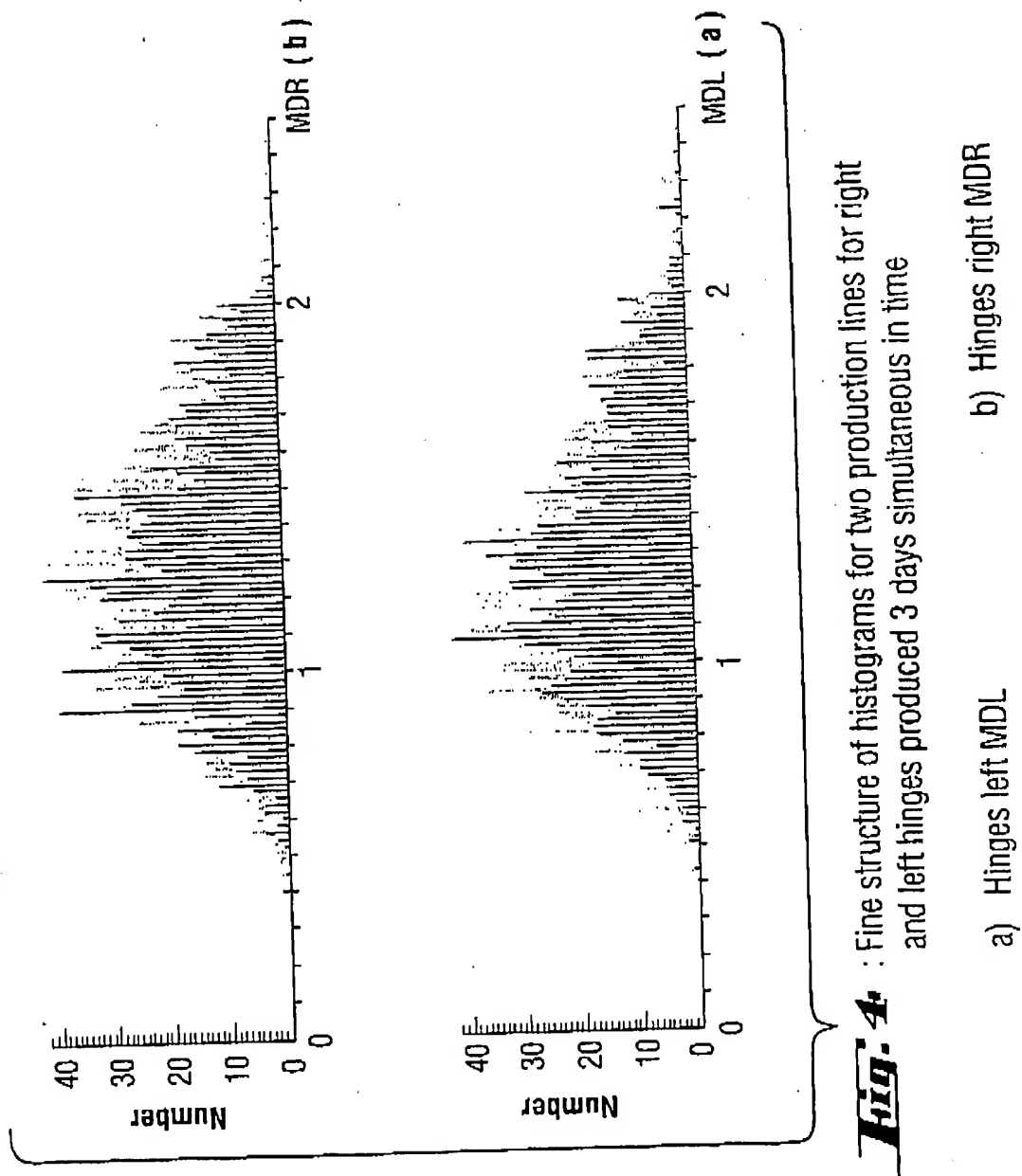


Fig. 3 : Histogram of the torque MD with the measuring range 1.0 Nm to 1.5 Nm on the X-axis

REPLACEMENT SHEET

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REPLACEMENT

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Global-Scaling-Calculation (GSC) 3000 professional
File Analysis F2 Synthesis F3 Optimization Reset F5 Help

Current DS Analysis Synthesis Pre-History Post-History Reset

Optimize Super-flexib.

Overview data records
Overview standard measures

No. 0 Designation: Category: 1/1

SubY: 1.503283193505E-10 SubZ: 1 SubX: 1.27
IntY: 1.503274152907E-10 IntZ: 1 IntX: 1.27

Measure: W X: 1 +dX: 0 -dX: 0 X take over PartZ: 2 GlobH: 2 GlobC: 1.5 SubV: -4.98447465762145 IntV: -4.9856458309444

SubNO: 24 IntNO: 24 SubN1: 6 IntN1: 6 SubN2: -5 IntN2: -5

Fig. 5 : GSC3000 tool for GS analysis of physical and technical variables

REPLACEMENT

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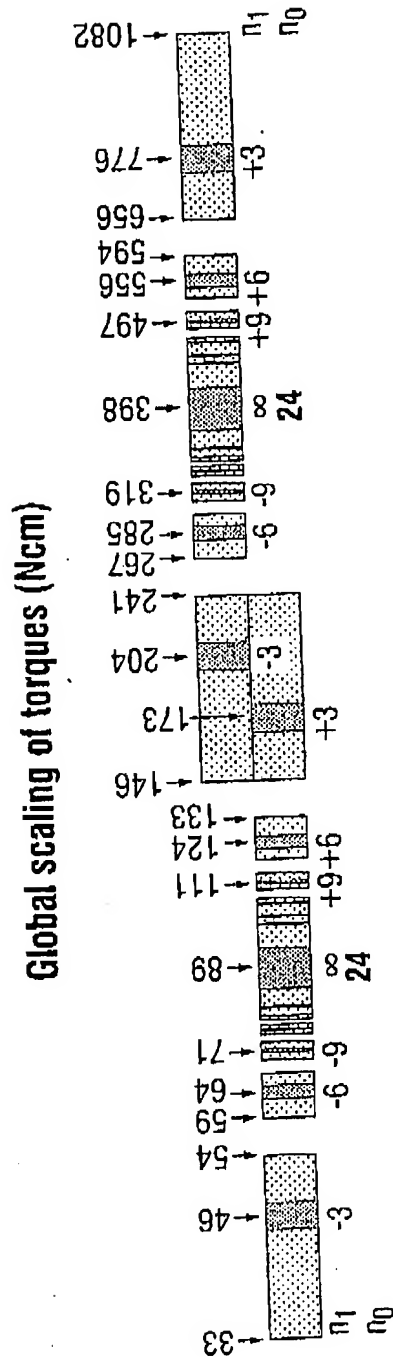


Fig. 6 : GS analysis of torque (in Ncm) of automotive hinges

REPLACEMENT

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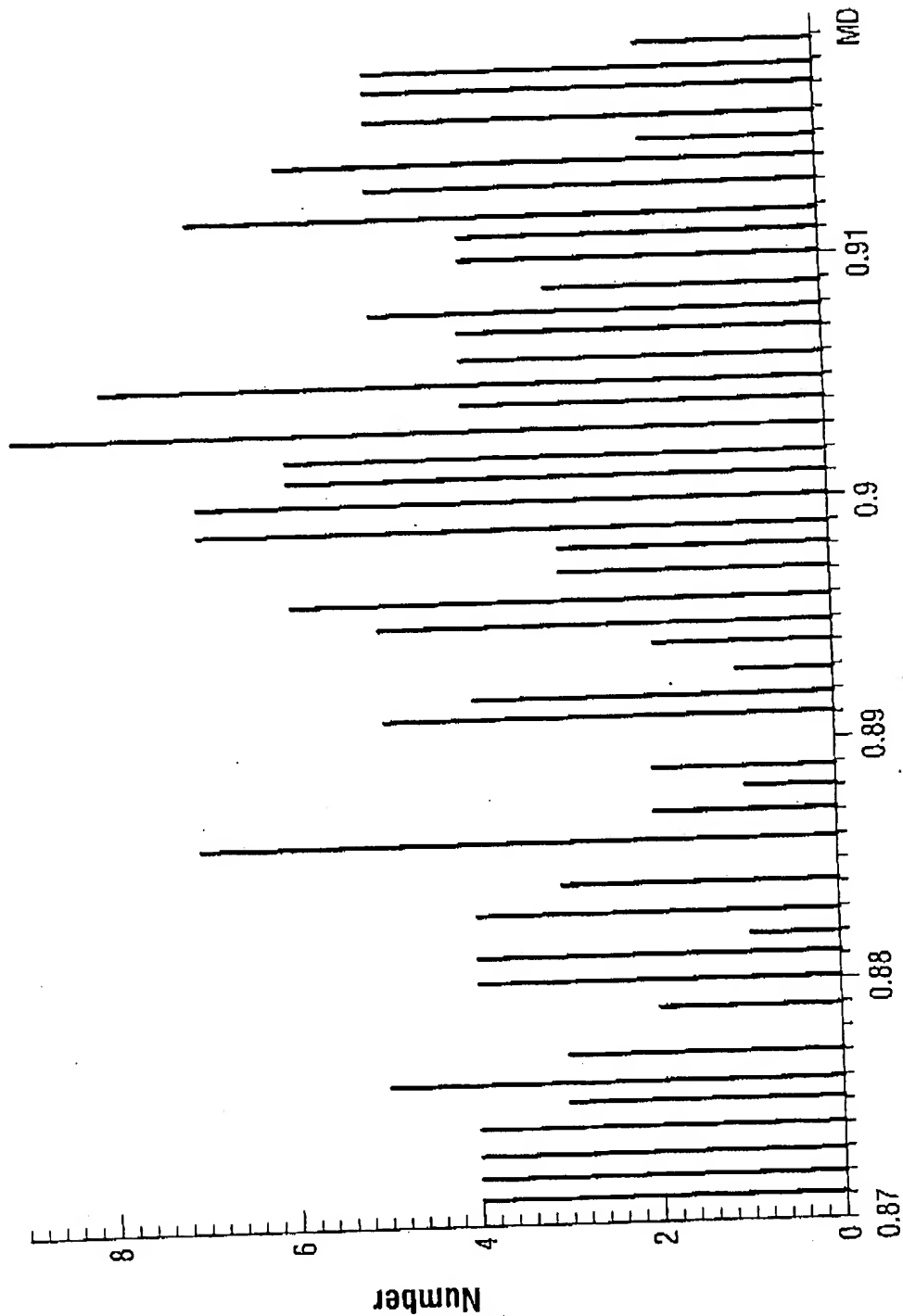


Fig. 7 : Histogram of generated torques in a range of 0.87 to 0.92 Nm

KF2A2E M C N I

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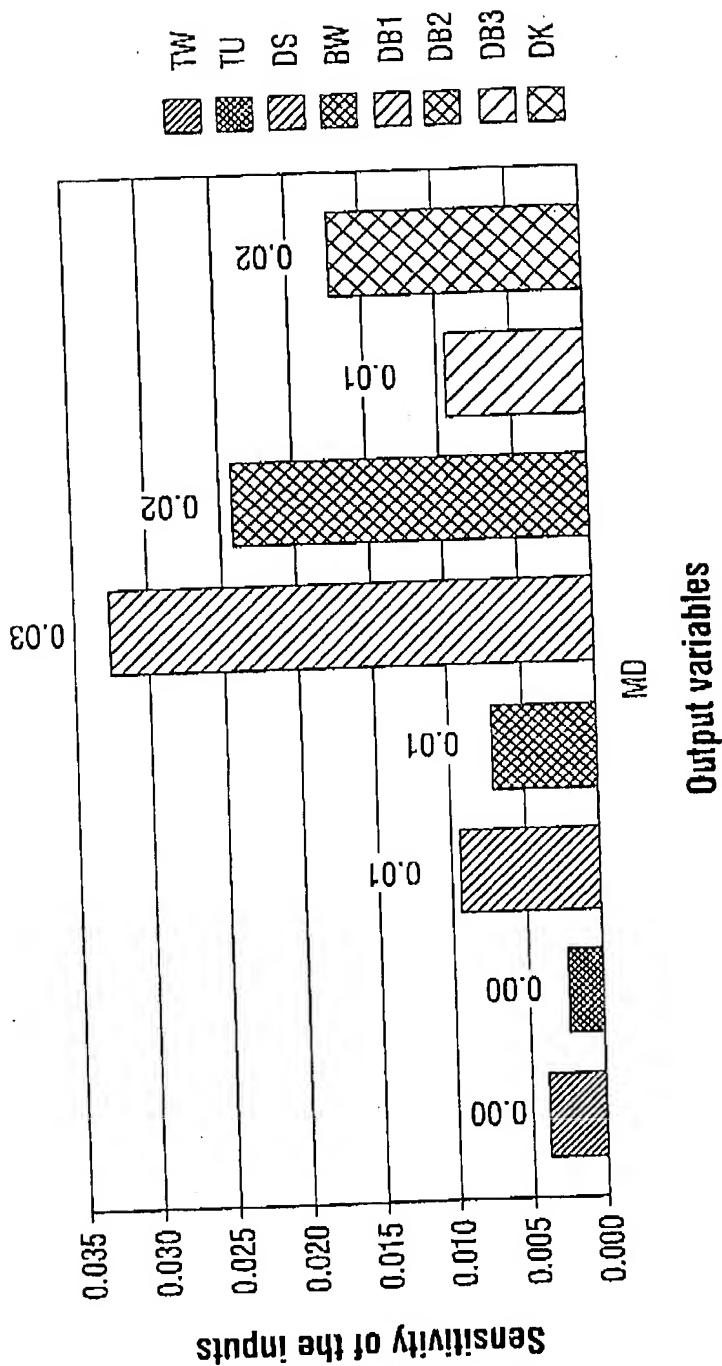


Fig. 8 : Sensitivity analysis of a hinge product
(sensitivity of inputs to output variables MD)

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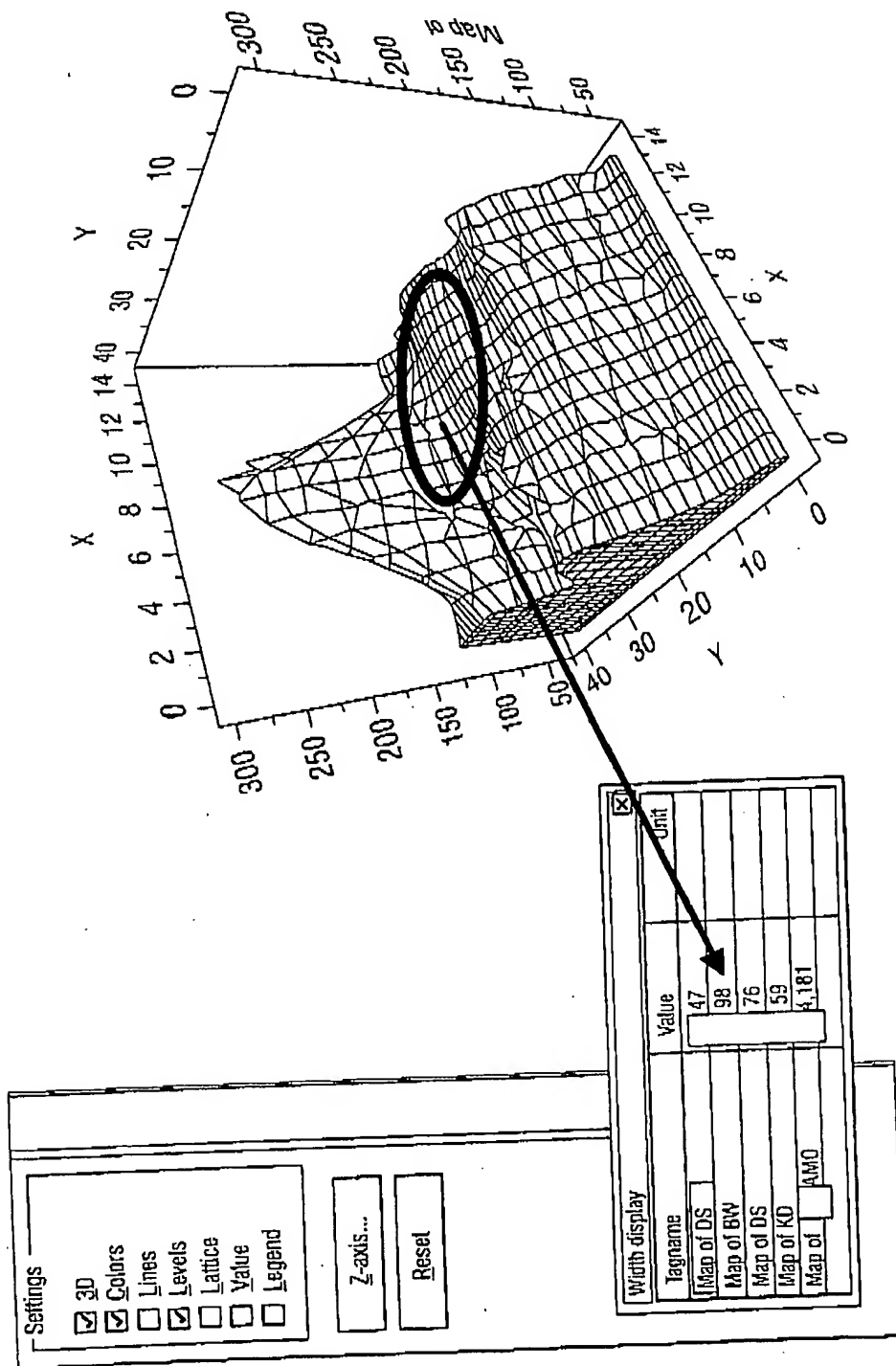


Fig. 9 : Process optimization via self - organizing maps by automatically back calculating the target variable MD to the input values to be set

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ID	TRA	linie	DK	DORNSPS	TW	TU	DS	BW	DB1	DB2	DB3	MDmin	MDmax	MD
1234	AAB	R	0.019	90	23.81	25.23	0.01382	0.000485	0.013957	0.013926	0.013954	1.319	1.457	1.392
1123	AAG	R	0.019	90	24.33	24.47	0.01401	0.000471	0.013962	0.013956	0.013955	1.38	1.435	1.392
4321	KKA	R	0.019	80	22.39	23.55	0.01289	0.000484	0.013961	0.013958	0.013942	1.357	1.438	1.392
2468	RTC	R	0.017	70	25.11	24.7	0.01405	0.000468	0.013969	0.013966	0.013943	0.046	1.445	1.392
12	UKK	R	0.019	90	23.35	23.95	0.01313	0.000473	0.013967	0.013966	0.013947	1.37	1.419	1.392
1357	AAT	R	0.02	90	24.36	24.21	0.01199	0.000471	0.013987	0.013967	0.013955	1.369	1.427	1.392

Fig. 10 : Depiction of possible input variables for hinges with target torque MD = 1.392 Nm

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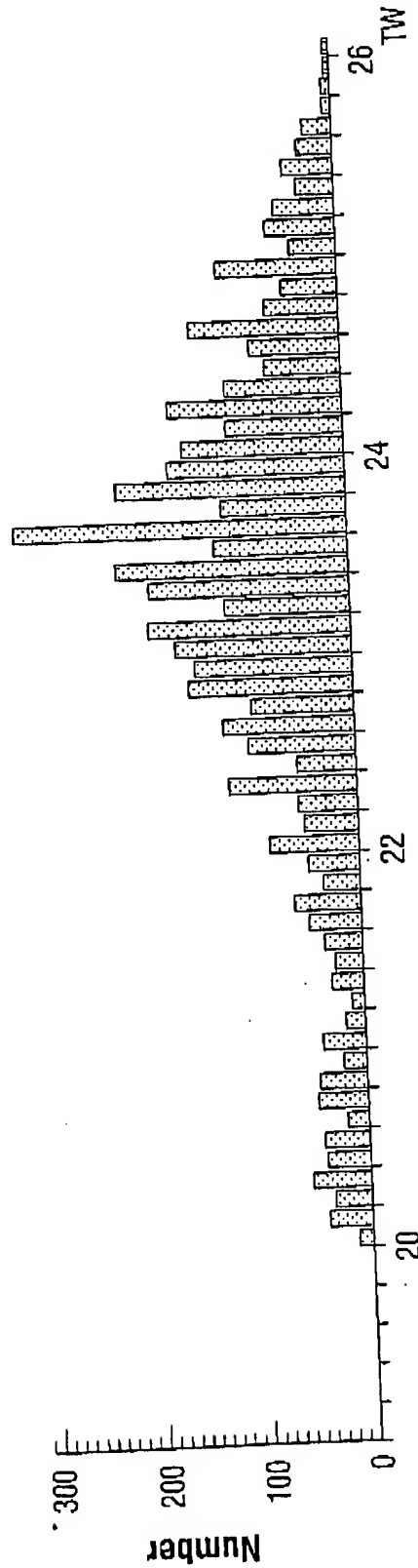


Fig. 11 : Histogram of temperature TW for a production line for manufacturing hinges